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**CONTRIBUTIONS TO THE SYNONYMY OF SERPENTS IN THE FAMILY  
ELAPIDÆ.**

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In Mr. Ruthven's epoch-making monograph, *Variations and Genetic Relationships of the Garter-snakes*, one reads: "An examination of the systematic work that has been done upon the snakes shows, as might be expected, that it is largely analytical in its nature, being for the most part descriptive of the existing diversities";<sup>1</sup> and a little further along, he adds: "After analysis, therefore, as has been said, comes the need of a larger synthesis."<sup>2</sup>

The first step in the synthetic work is the reexamination of specimens that have been made the types of new species. This note calls attention to five that should be stricken from the list of valid species.

<i>Described as New.</i>	<i>Correct Status.</i>
<i>Naja tripudians samarensis</i> Peters	<i>Naja tripudians</i> Merrem.
<i>Naja morgani</i> Mocquard.	<i>Walterinnesia ægyptica</i> Lataste.
<i>Callophis boettgeri</i> Fritze.	<i>Callophis japonicus</i> Guenther.
<i>Callophis swinhoei</i> Denburgh.	<i>Callophis maclellandii</i> (Reinhardt).
<i>Elaps heterochilus</i> Mocquard.	<i>Elaps spixii</i> (Wagler).

***Naja tripudians* Merrem.**

TYPE.—*Naja tripudians* Laur., nova var. *Samarensis*, Peters.<sup>3</sup>  
Berlin Museum. Loquilocun, Samar, Philippine Islands.

The subspecies of Peters, which was later promoted to the rank of a species, is based upon a cobra that is normal in every respect, with the exception that the supralabials are reduced from seven to six. This is brought about by the fusion of the normal third and fourth shields. As the result of this two more characters become altered: there is but one labial, the fused shield, entering the eye, and the rostral shield becomes a trifle wider. Four specimens from Samar have been examined at the United States National Museum and at the Senckenberg Museum. In these specimens the rostral and the supralabial shields were normal, the scale count averaged twenty-one

<sup>1</sup> 1908, *Bulletin* 61, U. S. National Museum, p. 1.

<sup>2</sup> *Loc. cit.*, p. 2.

<sup>3</sup> 1861, *Mon. Berl. Akad.*, p. 690.

rows on the neck and nineteen on the body, the gastrosteges one hundred sixty-nine, the urosteges fifty, and the total two hundred nineteen.

In the *Catalogue of the Snakes in the British Museum* there is a full page of synonymy for *Naja tripudians*, followed by the remark: "This species, as here understood, varies very considerably, and the forms enumerated hereafter might be regarded as distinct species but for the absence of any sharp demarcation-lines between them." Instead of this serving as an object lesson of the futility of the endeavor to divide a complex and variable species such as the cobra into endless subspecies, labor is still being expended.

The present vogue is to arrange the cobras in an arithmetical series, calculated from the number of ventral and subcaudal shields or from the sum of both. Where a gap in the series is discovered (which gap is regularly due to lack of sufficient material), there to boldly draw a line between this and that subspecies. On one occasion no demarcation-lines whatever were needed to reestablish a subspecies. We learn<sup>4</sup> that the variety *leucodira* comes from Sumatra and *sputatrix* from Java. The distinguishing characters of the two are presented in tabular form:

Variety.	Locality.	Scales.		Gastrosteges.	Urosteges.
		Neck.	Body.		
<i>leucodira</i> .....	Sumatra	25-23-21	21-19-17	174-193	46-55
<i>sputatrix</i> .....	Java	25-23	23-21-19	163-183	44-53

In other words, this table shows:

*Sumatran specimens* to be characterized by having at times two scale rows less on the neck, two less on the body, ten more gastrosteges, and two more urosteges than some Javan specimens.

*Javan specimens* to be distinguishable by occasionally having two more scale rows on the body, eleven gastrosteges less, and two urosteges less than some Sumatran specimens.

As a matter of fact, when two groups of animals require to be defined in terms of this nature, it really means that they belong to the same species, and that the only tangible difference between them is to be found on the locality label.

*Walterinnesia aegyptica* Lataste.

TYPE.—*Naja morgani* Mocquard.<sup>5</sup>

Mus. d'Hist. Nat., No. 04-562. Arabistan, Persia.

<sup>4</sup> 1912, *Mem. Mus. Comp. Zoöl.*, Vol. XLIV, No. 1, pp. 135, 136.

<sup>5</sup> 1905, *Bull. Mus. Paris*, XI, p. 78.

*Squamation*.—Scales in 23 rows on the neck and 22 rows on the anterior part of the body; gastrosteges 184; anal divided; urosteges 44 pairs, the first to the ninth entire. Rostral deeper than broad, portion visible from above measuring three-fourths its distance from the frontal; frontal longer than wide (7 mm. by 5 mm.); one preocular, two postoculars, and one subocular; two anterior and three posterior temporals; seven supralabials, the third and fourth entering the eye, third the deepest, fifth touches the inferior postocular on the right but not on the left side; anterior geneials longer than the posterior.

*Anatomy*.—Head 34 mm. long; snout 10.6 mm., projecting 4 mm. beyond the tip of the lower jaw; diameter of the eye 3.5 mm., its distance from the mouth 4.8 mm. Maxillary bone extending forwards beyond the palatine, and bearing in addition to the fangs two small grooved teeth.

COTYPES.—*Naja morgani* Mocquard.

Mus. d'Hist. Nat., No. 04-563. Arabistan, Persia.

*Squamation*.—Scales in 24 rows on the neck; gastrosteges  $182\frac{1}{2}$ , the 182d shield is divided; anal divided; urosteges 46 pairs, the second partly divided, the third entire.

Mus. d'Hist. Nat., No. 04-564. Arabistan, Persia. Total length 562, tail 70 mm.

*Squamation*.—Scales in 25 rows on the neck and 23 on the anterior part of the body; gastrosteges  $196\frac{1}{2}$ ; urosteges 40 pairs, the first to the third entire. Rostral broader than deep, portion visible from above three-fourths as long as its distance from the frontal; frontal longer than broad (4.7 mm. by 3 mm.); one preocular, two postoculars, and one subocular; two anterior and three posterior temporals.

*Anatomy*.—Head 23.5 mm. long; snout 7.5 mm.; diameter of the eye 2.6 mm., its distance from the mouth 3 mm.; pupil oval.

Mus. d'Hist. Nat., No. 04-565. Arabistan, Persia. Total length 650, tail 92 mm.

*Squamation*.—Scales in 25 rows on the neck and 23 on the anterior part of the body; gastrosteges  $186\frac{1}{2}$ ; anal divided; urosteges 45 pairs, the second to the ninth entire. Internasals 3.2 mm. long; prefrontals 3.3 mm. long; frontal 5.6 mm. long and 4.1 mm. broad, its distance from the rostral 4.2 mm.

*Anatomy*.—Head 23 mm. long and 16 mm. broad; snout 8.5 mm. long; diameter of the eye 3 mm., its distance from the mouth 3.6 mm.

Mus. d'Hist. Nat., No. 04-566. Arabistan, Persia.

*Squamation*.—Scales in 23 rows on the neck and 21 on the ante-

rior part of the body; gastrosteges 193; anal divided; urosteges 43 pairs, the second to the sixth entire. Rostral 3.3 mm. long, 2.3 mm. broad, portion visible from above equals 1.5 mm., its distance from the frontal 2.5 mm.; internasals 2 mm. long; prefrontals 2 mm. long; parietals 5.2 mm. long; two preoculars, two postoculars, and one subocular; two anterior temporals, two posterior on the right and three on the left side.

*Anatomy*.—Head 15 mm. long; snout 5 mm. long; diameter of the eye 1.8 mm., its distance from the mouth 1.8 mm.

*Calliophis japonicus* Guenther.

TYPE.—*Callophis boettgeri* Fritze.<sup>6</sup>

Mus. Senckenbergianum No. 9395. Tokuchimura, Okinawa, Loo Choo Islands. Male; total length 384, tail 37 mm.

*Squamation*.—Temporals one anterior, one median, and two posterior on the right, and one anterior, two median, and two posterior on the left side.

*Coloration*.—Five longitudinal stripes, broader than the intervals; the lateral pair terminate at the base of the tail. Body with nine, tail with one cross-band.

The records of the color pattern show that the longitudinal markings vary in number and width from a single narrow vertebral line to five stripes that are broader than the intervals. Furthermore, between the extremes there exist the following unbroken series of intermediate designs:

A median stripe.

A median stripe with trace of the intermediate pair.

A median stripe and the intermediate pair.

A median stripe, the intermediate pair, and a trace of the lateral pair.

A median stripe, the intermediate, and the lateral stripes, narrower than the intervals.

A median stripe, the intermediate, and the lateral stripes, broader than the intervals.

Specimens possessing these various color patterns do not have associated with them the slightest diversity in structure. The serpents with five stripes that are broader than the intervals have been elevated to specific rank as *Callophis boettgeri* Fritze. The name has been correctly assigned to synonymy<sup>7</sup> and should be allowed to remain there.

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<sup>6</sup> 1894, *Zool. Jahrb.*, VII, p. 861.

<sup>7</sup> 1896, Boulenger, *Cat. Sn. Brit. Mus.*, III, p. 395.

Major Wall mentions two specimens as having the last ventral shield divided. This condition seems to be prevalent to a marked degree in Asiatic Elapidæ.

The local name *aka-mata*, signifying "red-death", is a simple reference to the color and the dangerous nature of the beast. The *mata* element of the phrase is the Malayo-Polynesian root form meaning "death", and is used in this connection from Madagascar in the west to Hawaii in the east.

*Calliophis macclellandii* (Reinhardt).

TYPE.—*Calliophis swinhoei* Denburgh.<sup>8</sup>

California Acad. Sci., No. 14,978. Suishako, Central Formosa. Female; total length 220, tail 20 mm.

This synonym is based upon a specimen that was purchased from a dealer in Japan. The description or the type does not mention any character by which it may be distinguished from a normal *Calliophis macclellandii*; the diagnosis, which is an epitome of the description, reads, "Similar to *Calliophis macclellandii*, but with more numerous gastrosteges and urosteges; the sum of the gastrosteges and urosteges always more than 256."

The distribution of *Calliophis macclellandii* is from northern India to Formosa. It belongs to a group in which a particularly wide range in the number of vertebræ frequently occurs in the same species. If the records be tabulated, one may see at a glance the following data:

Gastrosteges:

Range in 17 specimens.....	182-240
Range in 12 from mainland.....	182-231
Range in 5 from Formosa.....	219-240
Overlapping of mainland and island specimens:	
In terms of gastrosteges.....	12
In percentage of range.....	20.6%

Urosteges:

Range in 17 specimens.....	25-41
Range in 12 from mainland.....	25-36
Range in 5 from Formosa.....	32-41
Overlapping of mainland and island specimens:	
In terms of gastrosteges.....	5
In percentage of range.....	30%

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<sup>8</sup> 1912, *Proc. Cal. Ac. Sci.*, (4), Vol. III, p. 255.

Sum of the gastrosteges and urosteges:

Range in 17 specimens..... 210-274

Range in 12 from mainland..... 210-256

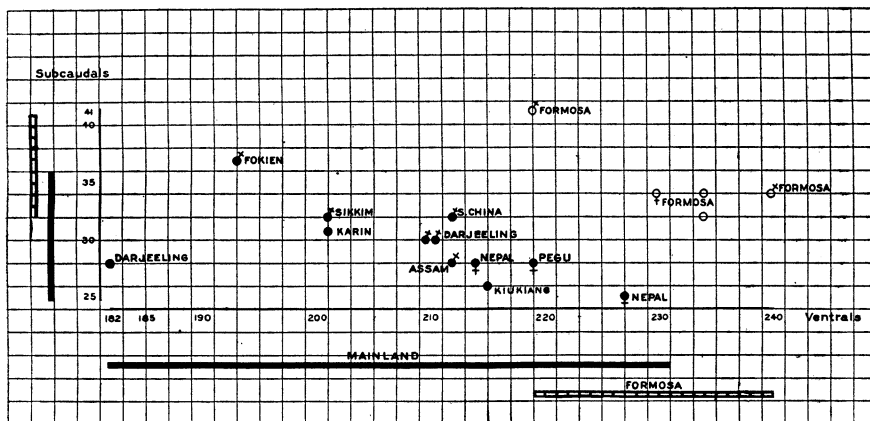
Range in 5 from Formosa..... 260-274

Gap between mainland and island specimens:

In terms of gastrosteges..... 4

In percentage of range.....  $6\frac{1}{4}\%$

If this data be plotted on squared paper, due regard being taken of the gastrosteges and the urosteges count, an instructive diagram will result. The solid dots represent mainland and the circles island specimens; where the sex has been recorded there is added the conventional sign.



Observations along these lines are of interest when carried out as studies in geographical variation, but when they become the basis of new species nothing but confusion will eventually result.

The point that these tables really make clear is that the island specimens differ from those of the mainland in having an increased number of vertebræ. This is a well-known phenomenon, and it occurs in almost all the species of Colubrinæ, Najidæ, and Crotalinæ that inhabit both the mainland of Asia and the adjacent island arcs.

To establish *C. swinhoi* involved the following procedure: From the records of twelve mainland and five island specimens, seventeen in all, certain additions and subtractions were made, and a difference of four vertebræ in a range of sixty-four, equivalent to  $6\frac{1}{4}\%$ , was discovered. This  $6\frac{1}{4}\%$  variation in a single character was added to the locality label, and the sum was a new species.

Where the same species inhabits the mainland and an adjacent

island, and where but a few examples are studied from each locality, it is but the application of the most elementary arithmetic to demonstrate that a small gap exists between the two groups. Where these two groups are recognized in taxonomy, and where the series increases and the gap disappears, then but one criterion is left by which the determination of a specimen may be accomplished—namely, the locality label.

*Elaps spixii* (Wagler).

TYPE.—*Elaps heterochilus* Mocquard.<sup>9</sup>

Mus. d'Hist. Nat., No. 87-122. Brazil. Total length 553, tail 43 mm.

*Squamation*.—Scales in 15 continuous rows; gastrosteges 209; anal entire; urosteges 29 pairs, the 3d to the 8th, and the 24th entire. One preocular and two postoculars; six supralabials, the third and fourth entering the eye.

*Coloration*.—Thirty-six subequal black rings; distinct arrangement in triads is present only in the first three sets, posteriorly the interspaces between the sets are distinguished by being a trifle wider and by having the red scales with a slightly smaller black spot at the tip.

*Anatomy*.—Diameter of the eye 1.6 mm., its distance from the mouth 2 mm.

There are nearly forty species of *Elaps*, and all have seven supralabials. There is no genus of anything like this size with so uniform a count. The reduction to six supralabials seen in this specimen is caused by the fusion of the normal first and second; this fused shield shows on its lower margin an indenture and a very short suture extending upward. The reduction in the number of infralabials is due to the fusion of the normal first and second; the right shield has a short incisure from the oral rim. These dents and short sutures indicate the position of the normal line of separation. The temporals are irregular; the anterior shield on the right side being fused with all the lateral cephalic shields as far back as the last labial; the posterior temporal on the left side is fused with the shield that normally intervenes between it and the azygos plate behind the parietals.

*E. heterochilus* has been based upon a specimen having a number of the normal shields fused and others not completely divided.

M. Mocquard suggested that these conditions might be abnormal when he wrote, "La disposition observée ici pourrait donc n'être qu'une simple anomalie."

*U. S. F. S. Albatross, July 6, 1913.*

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<sup>9</sup> 1887, *Bull. Soc. Philom.*, (7), XI, p. 39.